DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

PROJECT TITLE: LIFE SCIENCES LABORATORY-1 (331 BUILDING)
Date Approved: 14-Feb-02
Emission Unit Name: EP-331-01-V

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT [WAC 246-247-040(4)]
ALARACT

BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
Room 302	Fan	2	in parallel (fan common to glove box and hoods)
Rooms 101-107 fume hood/chambers	HEPA	1	
Rooms 100-107 glove boxes	HEPA	2	In series
3rd floor fume hood	HEPA	1	
Inhalation suite (glove boxes & fume hoods)	HEPA	2	In series
Room 302	HEPA	1	
Third Floor Change Rm	HEPA	1	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-075(2)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

01/23/02 NOC Modification, Life Sciences Laboratory - 1 (331 Building), to update facility floor plan configurations, incorporate proposed research programs, and to incorporate new radionuclides. Received January 23, 2002. Approval letter, AIR 02-207 mailed on February 14, 2002 replaced all previous Conditions/Limitations for this NOC.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).

2) The total abated emission limit for this Notice of Construction is limited to 8.07E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to
7.13E+00 mrem/year to the Maximally Exposed Individual.

3) **This process is limited to:**
research activities conducted in the 331 Building support the Hanford environmental mission and other key DOE
missions of national and international importance. Research activities are performed on both radioactive and
non-radioactive samples. Laboratory processes are conducted "continuously" (i.e., year-round, during normal
business hours). The following processes are allowed in the 331 Building:

Study of the health effects of chemical and radiation exposure on animals and in cells grown in culture.

Examining the uptake and transformation effects of radionuclides in soils, plants, animals and microorganisms.

Molecular level studies using radioactive tracer materials in biological and non-biologic systems.

Subsurface microbiology including the physiology and ecology of subsurface microorganisms, degradation of
organic contaminants and bioremediation, enzymatic reduction of metals, and biogeochemical cycling of nutrients.

Investigation of macromolecular structure and dynamics: modeling of radiation (or chemically) damaged DNA;
study the effects of tumor formation and biological systems; study of materials that concentrate or detoxify pollutants from the environment.

Development of instrumentation and analytical methods.

Characterizing and monitoring aquatic and terrestrial ecosystems through the development and deployment of
new technologies and methods.

Researching impacts of water use practices on fisheries and wildlife and the response of aquatic ecosystems to
engineered structures and to natural and man-induced stresses.

Research to promote the understanding of the chemical and biological processes that govern the mobility and

degradation of a range of inorganic, radionuclide and organic contaminants in soils, sediments, and ground water

systems.

Measurements of exposures to physical, radiological, and chemical agents.

01/21/98 Original NOC, Modifications to the Life Sciences Laboratory (331 Building) 300 Area, approved on Developing technology for the separation, purification, production, and delivery of medically useful isotopes.
January 21, 1998 via AIR 98-108.

03/12/96 Received approval to remove a HEPA filter bank from the 331 building exhaust via RTAM.

4)**The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am	241		4.51E-01
Am	243		1.86E-01
Ba	133		1.00E-02
C-	14		7.74E-01
Ca	45		2.00E-01
Cd	109		2.00E-01
Cm	248		4.20E-05
Co	57		2.00E-01
Co	60		2.00E-01
Cr	51		2.00E-01
Cs	137		2.25E-01
Eu	152		1.20E-01
Fe	55		2.00E-01
Fe	59		2.00E-01
H-	3		1.26E+01
I-	125		1.00E+00
I-	131		5.01E-01
Mn	54		2.00E-01
Ni	63		2.00E-01
Np	237		3.67E-01
P-	32		1.00E+01
P-	33		2.00E-01
Pu	238		1.71E+00
Pu	239		6.29E-01
Pu	240		1.03E-01
Pu	241		1.69E+00
Pu	242		4.59E-02
S-	35		1.52E+02
Sr	85		1.20E-01
Sr	90		1.00E+02
Tc	99		9.27E+02
Tc	99	m	2.00E+01
Th	232		9.81E-01
U-	235		1.87E-01
U-	238		1.15E+00
Y-	90		3.50E+01
Zn	65		2.00E-01

5)Emission unit EP 331-01-V must use an isokinetic sampling probe with design specifications meeting ANSI N
13.1.

6)Stack emissions will be sampled for particulate matter containing alpha and beta activity using methods prescribed within Environmental Protection Agency Methods A-4 and B-4, and analyzed for gross alpha and
gross beta activity, and specific radionuclides, as required.

7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5) and 246-247-060(5)).

8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).

9) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

10) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).

12) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).

13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).

14) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).

15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).

16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).

17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).

18) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).

19) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and

indicate
whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any
active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity
will not be considered permanently shut down or completed until a report of closure is received and approved
by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit
terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet
any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit
or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit
or activity was in operation, shall be kept in accordance with WAC 246-247-080 (8). (WAC 246-247-080

(6))

20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).

21) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

22) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

23) The emission unit monitoring system shall have the following activities performed:

Within two years of this approval, and annually thereafter:

a. A visual check of nozzle position and orientation as well as measurements of nozzle openings;
b. Checks to ensure the tightness of all fittings and connections as well as a leak test of the entire sampling system; and
c. Visual inspections for corrosion, physical damage, or dust loading of the probe, sample lines, and monitoring system equipment.

Annually starting within one year of this approval:

d. A functional/calibration check of monitoring system instrumentation shall be performed; and
e. USDOE shall provide to WDOH for review copies of the procedures used to perform the above activities.